

REMARKS/ARGUMENTS

Claims 1, 3-16, and 18-35 were previously pending in the application. Claims 27, 29, 32, and 34-35 are canceled; and claims 28 and 31 are amended herein. Assuming the entry of this amendment, claims 1, 3-16, and 18-26, 28, 30-31, and 33 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

Claims 1, 3-16, and 18-26 are allowed.

On page 2, the Examiner rejected claims 29 and 32 under 35 U.S.C. § 112, second paragraph, as being indefinite for reciting third and fourth electrodes without having a recitation of the first and second electrodes. On page 3, the Examiner rejected claims 27, 28, 30, and 31 under 35 U.S.C. § 102(b) as being anticipated by Plante. On page 3, the Examiner rejected claims 34 and 35 under 35 U.S.C. § 102(b) as being anticipated by Motamedi.

Since claims 27, 29, 32, and 34-35 are canceled, the rejections of those claims are now moot. For the following reasons, the Applicant submits that claims 28, 30-31, and 33 are allowable over the cited references.

Claim 28 is amended to include recitations of claim 29, with the electrode labels previously present in claim 29 corrected from “third” and “fourth” to “first” and “second,” respectively. Claim 31 is similarly amended.

Amended claim 28 is directed to a MEMS device having: a substrate; a deformable plate movably connected to the substrate; a first actuator mounted on the deformable plate and adapted to apply a deformation force to the deformable plate to change the shape of the plate; and a second actuator adapted to move the plate with respect to the substrate. The second actuator includes a first electrode attached to the plate and a second electrode mounted on the substrate such that, when a voltage differential is applied between the first and second electrodes, the first electrode moves with respect to the second electrode thereby rotating the plate.

Plante discloses a lightweight deformable mirror suitable for space applications. The mirror has two membrane-like sheets, with a plurality of electrodistortive actuators sandwiched between the sheets (see, e.g., col. 1, lines 62-66). The mirror, as a whole, is supported on a support structure by three pairs of kinematic bi-pod mounts. Each mount includes a pair of adjustable support members whose lengths can be varied using an electrical motor, with desired orientation of the mirror attained by appropriately changing the lengths. The Applicant submits that Plante does not teach or suggest at least the limitation of “the second actuator comprises: a first electrode attached to the plate, and a second electrode mounted on the substrate, wherein, when a voltage differential is applied between the first and second electrodes, the first electrode moves with respect to the second electrode thereby rotating the plate,” explicitly recited in claim 28.

Motamedi discloses a MEMS resonator having a cantilever beam, which is fixed to a substrate at one end and extends freely over the substrate at the other end, with a bimorph actuator stacked atop the beam at the fixed end. The bimorph actuator includes several layers of material having different thermal expansion coefficients. An alternating current is passed through the actuator causing it to heat up and cool down in a periodic manner. The oscillating temperature of the actuator causes it, through the bimorph effect, to change the deformation force imparted by the actuator onto the beam, thereby changing the shape of the beam and causing it to oscillate between a first deformed shape and a second deformed

shape. The Applicant submits that Motamedi does not teach or suggest at least the limitation of "a second actuator adapted to move the plate with respect to the substrate, wherein the second actuator comprises: a first electrode attached to the plate, and a second electrode mounted on the substrate, wherein, when a voltage differential is applied between the first and second electrodes, the first electrode moves with respect to the second electrode thereby rotating the plate," explicitly recited in claim 28.

For all these reasons, the Applicant submits that claim 28 is allowable over Plante and Motamedi. For similar reasons, the Applicant submits that claim 31 is also allowable over Plante and Motamedi. Since claims 30 and 33 depend variously from claims 28 and 31, it is further submitted that those claims are also allowable over Plante and Motamedi.

In view of the above amendments and remarks, the Applicant believes that the now pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

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